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(12) United States Patent

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(54) IMAGE FORMATION APPARATUS HAVING GREATER DIFFERENTIAL VOLTAGE FOR LAST STATION IN A PRINT CONVEYANCE DIRECTION

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 G03G 15/095; G03G 15/08
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(56) References Cited

U.S. PATENT DOCUMENTS

2004/0137349 A1*	7/2004	Horikoshi	G03G 9/0902
			430/108.6
2004/0146312 A1*	* 7/2004	Saito	G03G 15/065
			399/55

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2009/0297188 A1*	12/2009	Yamamoto G03G 15/065
2010/0303488 A1*	12/2010	399/49 Yanagi G03G 15/065
2011/0097097 A1*	4/2011	399/45 Eom G03G 15/065
2013/0195496 A1*	8/2013	399/55 Yamazawa G03G 15/5004
2013/0230342_A1*	9/2013	399/88 Koido G03G 15/0806
	3.2015	399/281

FOREIGN PATENT DOCUMENTS

JP	2014-032280	Α	2/2014

^{*} cited by examiner

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(57) ABSTRACT

An image formation apparatus includes development devices placed in stations and configured to sequentially start development in an order according to the arrangement order of the stations, and a power supply unit. Each development device includes a development unit, a supply unit to supply a developer to the development unit, and a regulation member to regulate an amount of the developer on the development unit. The power supply unit applies voltages to each regulation member and each supply unit such that a first development device has a greater differential voltage when the first development device is placed in a first station than when placed in a second station in which the development is started earlier than in the first station, where the differential voltage denotes a voltage obtained by subtracting the absolute value of the supply unit's voltage from the absolute value of the regulation member's voltage.

17 Claims, 13 Drawing Sheets

